

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/088,767

Filing Date: March 19, 2002

Applicant: Andrew Churchett, et al.

Group Art Unit: 2837

Examiner: Karen Masih

Title: DIRECT CURRENT MOTOR CONTROL CIRCUIT

Attorney Docket: SCH-00063

Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RECEIVED**

**DEC 10 2004**

TECHNOLOGY CENTER 2800  
SPECIAL PROGRAM CENTER

**NOV 16 2004**

TECH CENTER 1600/2004

**PETITION UNDER 37 CFR 1.181(a) TO WITHDRAW  
THE HOLDING OF ABANDONMENT**

Sir:

Pursuant to 37 CFR 1.181(a), this is a petition to withdraw a holding of abandonment that has been entered in the above referenced patent application. Applicant wishes to withdraw the holding of abandonment because it is believed that a timely response to the Office Action (June 3, 2003) was filed on September 3, 2003.

**I. Petition to Withdraw the Holding of Abandonment**

MPEP 711.03(c), paragraph I, states "[w]here an applicant contends that the application is not in fact abandoned...a petition under 37 CFR 1.181(a) requesting withdrawal of the holding of abandonment is the appropriate course of action, and such petition does not require a fee." Section 1.181(f) states "Any petition under this part not

filed within two months of the mailing date of the action or notice from which relief is requested may be dismissed as untimely, except as otherwise provided. This two-month period is not extendable.” An exception to this rule is MPEP 711.03(c) paragraph I(C), which states, “[r]ather than dismiss an untimely petition to withdraw the holding of abandonment under 37 CFR 1.181(f), the Office may require a terminal disclaimer as a condition of granting an untimely petition to withdraw the holding of abandonment.”

## **II. Background of this Petition**

The facts pertinent to this petition are set forth as follows:

- 1) On June 3, 2003, an Office Action was mailed rejecting certain claims, and objecting to others. See Exhibit 1, Copy of Office Action.
- 2) On September 3, 2003, an Amendment and Response Office Action was filed. The action contained amendments to the claims and the drawings. See Exhibit 2, Copy of Response and Amendment to Office Action.
- 3) On September 8, 2003, the return receipt post card was sent back, acknowledging receipt of the Amendment and Response Office Action. See Exhibit 3, Return Post Card.
- 4) On August 20, 2004, a Notice of Abandonment was mailed by the Patent Office. See Exhibit 4, Notice of Abandonment.

5) On September 15, 2004 and September 27, 2004 after receiving the Notice of Abandonment Applicant attempted to contact the Examiner to explain that a response had been submitted. The calls to the Examiner were never returned.

6) After no response had been received from the Examiner, Applicant filed this petition in a timely manner.

### **III. Analysis of Applicable Law**

Applicant now petitions to withdraw the holding of abandonment because there was no intent to abandon; a timely Response to the Office Action was filed on September 3, 2003. Included in this petition are Exhibits 1-4, the original Office Action, Response, Response postcard acknowledging receipt, and Notice of Abandonment. The exhibits, taken together with the facts above, clearly demonstrate that the timely filed Response to Office Action was received by the Patent Office and has apparently been misplaced.

As noted above, Applicant has been diligently trying to contact the Examiner regarding the Notice of Abandonment. Applicant called the Examiner on September 15, 2004 and September 27, 2004. Unfortunately those calls were never returned. Ultimately Applicant had to file this Petition more than two months from the Notice of Abandonment. Applicant does not feel a terminal disclaimer should be entered given the fact that Applicant has been diligently trying to contact the Examiner. However, the MPEP 711.03(c) paragraph (I)(C) states that "the Office may require a terminal disclaimer as a condition of granting an untimely petition to withdraw the holding of

abandonment." Should the Office determine that a terminal disclaimer is necessary then Applicant requests entry of the terminal disclaimer attached as Exhibit 5.


#### IV. CONCLUSION

In summary, this petition to withdraw the holding of Abandonment on the present application is based on the fact that a Response to Office Action had been filed in a timely manner and was in fact received by the Patent Office. However, it appears that the Response has been misplaced and this case has improperly been held abandoned. As such Applicant respectfully requests reconsideration and removal of the holding of abandonment.

Applicant does not believe that there is any fee for this petition or terminal disclaimer, however, Applicant hereby authorizes the Patent Office to charge deposit account number 501612 in the event that there are fees associated with the petition and disclaimer. The Commissioner is invited to telephone the Applicant's undersigned attorney at (248) 364-4300 if any unresolved matters remain.

Respectfully submitted,

WARN, BURGESS & HOFFMANN, P.C.  
Attorneys for Applicant(s)

By:   
Philip R. Warn  
Reg. No. 32775

P.O. Box 70098  
Rochester Hills, MI 48307  
(248) 364-4300

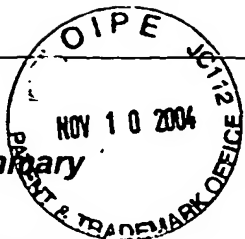
Dated: November 5, 2004

GLO:RPB:cah

1

SCH-00063

1st Office Action  
Due: 9-3-03  
Office Action Summary



Application No.

10/088,767 ✓

Applicant(s)

CHURCHETT ET AL ✓

Examiner

karen masih ✓

Art Unit

2837 ✓

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,6,7,9 and 11 is/are rejected.
- 7) ☒ Claim(s) 3-5,8 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: Karen Masih



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,767 ✓	03/19/2002 ✓	Andrew Churchett ✓	BRI -00063 ✓	2290

7590

06/03/2003

Philip R Warn  
Warn Burgess & Hoffmann  
Suite B125  
691 North Squirrel Road  
Auburn Hills, MI 48326

EXAMINER

MASIH, KAREN ✓

ART UNIT

PAPER NUMBER

2837 ✓

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Art Unit: 2837

1. The drawings are objected to because fig 1 needs to be labeled descriptively. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation , "... switch member is arranged to not operate said motor when ... period of time " is a negative limitation .

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and



the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1,2,9,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kegel et al in view of Houskamp.

Kegel et al discloses a motor control circuit for a dc motor having a pair of dc inputs supplied from negative and positive current sources wherein motor is actuated, control circuit comprising pair of unipolar control circuits wherein at least one of unipolar control circuits is connected between a respective current source and a current input to motor, see col 1 lines 6-20 and col 2 lines 10-20. Kegel et al lacks disclosing motor operating in one of said two directions. Houskamp discloses motor operating in forward and reverse, see col 3 lines 20-30 and lines 60-68, and col 5 lines 35-40.

It would have been obvious to one of ordinary skill in the art to use the motor control circuit of Kegel et al with the reversing motor Houskamp for improved control.

7. Claims 3-5,8,10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Prior art does not disclose where switch is controlled by an input bias signal, a current limiting member for adjusting input bias signal according to the current flowing through motor, such that switch adjusts input bias to said switch such that less current flows through motor when a predetermined period of current limiting has occurred.


8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Linke, Yoshizawa, Smith et al and Burson disclose positive and negative current source to a motor.

Art Unit: 2837

Any inquiry concerning this communication or earlier communications from the examiner should be directed to karen masih whose telephone number is 703-308-3108. The examiner can normally be reached on m-f 8.30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, robert nappi can be reached on 703-308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

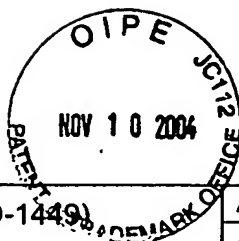
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-3080956.

  
karen masih  
Primary Examiner  
Art Unit 2837

KM  
May 22, 2003

571-272-2088

COPY OF PAPERS  
ORIGINALLY FILED



FORM 1449 (Based on Form PTO-1449)

**PATENT AND TRADEMARK OFFICE  
INFORMATION DISCLOSURE CITATION**  
(Use several sheets if necessary)

Sheet 1 of 1

ATTORNEY DOCKET No.	SERIAL No.
BRI-00063	10/088,767
APPLICANT	
Andrew Churchett, et al.	
FILING DATE	GROUP
March 19, 2002	2834

**U.S. PATENT DOCUMENTS**

Ref. Desig.	Examiner's Initials	Document Number	Date	Name	Class/ Subclass	(If appropriate) Filing Date
1.	<i>jh</i>	5,952,802	9/14/99	Pimley		
2.	<i>h</i>	5,530,327	6/25/96	Vecchiarino		
3.	<i>h</i>	5,514,940	5/7/96	Okamoto		
4.	<i>u</i>	4,798,967	1/17/89	Yamana, et al.		

**FOREIGN PATENT DOCUMENTS**

Ref. Desig.	Examiner's Initials	Document Number	Date	Country	Class/ Subclass	Translation Yes	No
1.							

**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)**

Ref. Desig.	Examiner's Initials	
1.		

TECHNOLOGY CENTER 2800

SEP 12 2002

RECEIVED

NOV 16 2004

TECH CENTER 1600/2539

Examiner: *[Signature]*

Date Considered: *5/23/03*

EXAMINER: Please initial if citation considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<b>Notice of References Cited</b>	Application/Control No. 10/088,767		Applicant(s)/Patent Under Reexamination CHURCHETT ET AL	
	Examiner karen masih		Art Unit 2837	Page 1 of 1


#### U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-4,749,931	06-1988	Kegel et al.	318/696
	B	US-4,341,985	07-1982	Houskamp, Robert W.	318/260
	C	US-3,565,402	02-1971	Ernest A. Linke	254/269
	D	US-6,420,804	07-2002	Yoshizawa, Nobukazu	307/140
	E	US-5,194,786	03-1993	Smith et al.	318/254
	F	US-6,101,827	08-2000	Burson, Benard	62/210
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

#### FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

#### NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	 <b>Karen Masih</b> <b>Primary Examiner</b>
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

## Revised Notice\*

# AMENDMENTS MAY NOW BE SUBMITTED IN REVISED FORMAT

The United States Patent and Trademark Office (USPTO) is permitting applicants to submit amendments in a revised format as set forth below. Further details of this practice are described in *AMENDMENTS IN A REVISED FORMAT NOW PERMITTED*, signed January 31, 2003, expected to be published in *Official Gazette* on February 25, 2003 (Notice posted on the Office's web site at

<http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/revamdtprac.htm>). The revised amendment format is essentially the same as the amendment format that the Office is considering adopting via a revision to 37 CFR 1.121 (Manner of Making Amendments). The revision to 37 CFR 1.121 (if adopted) will simplify amendment submission and improve file management. The Office plans to adopt such a revision to 37 CFR 1.121 by July of 2003, at which point compliance with revised 37 CFR 1.121 will be mandatory.

Effective immediately, all applicants may submit amendments in reply to Office actions using the following format. Participants in the Office's electronic file wrapper prototype<sup>1</sup> receiving earlier notices of the revised practice may also employ the procedures set out below.

### REVISED FORMAT OF AMENDMENTS

#### Begin on separate sheets:

Each section of an Amendment (e.g., Claim Amendments, Specification Amendments, Drawing Amendments, and Remarks) should begin on a separate sheet. *For example*, in an amendment containing a.) introductory comments, b.) amendments to the claims, c.) amendments to the specification, and d.) remarks, each of these sections must begin on a separate sheet. This will facilitate the process of separately indexing and scanning of each part of an amendment document for placement in an electronic file wrapper.

#### Two versions of amended part(s) no longer required:

The current requirement in 37 CFR 1.121(b) and (c) to provide two versions (a clean version and a marked up version) of each replacement paragraph, section or claim will be waived where an amendment is submitted in revised format below. The requirements for substitute specifications under 37 CFR 1.125 will be retained.

#### A) Amendments to the claims:

Each amendment document that includes a change to an existing claim, or submission of a new claim, **must include a complete listing** of all claims in the application. After each claim number, the status must be indicated in a parenthetical expression, and the text of each claim under examination (with markings to show current changes) must be presented. The listing will serve to replace all prior versions of the claims in the application.

- (1) The current status of all of the claims in the application, including any previously canceled or withdrawn claims, must be given. Status is indicated in a parenthetical expression following the claim number by one of the following: (original), (currently amended), (previously amended), (canceled), (withdrawn), (new), (previously added), (reinstated – formerly claim # ), (previously reinstated), (re-presented – formerly dependent claim # ), or (previously re-presented). The text of all pending claims under examination must be submitted each time any claim is amended. Canceled and withdrawn claims should be indicated by only the claim number and status.
- (2) All claims being currently amended must be presented with markings to indicate the changes that have been made relative to the immediate prior version. The changes in any amended claim should be shown by strikethrough (for deleted matter) or underlining (for added matter). An accompanying clean version is not required and should not be presented. Only claims of the status "currently amended" will include markings.
- (3) The text of pending claims not being amended must be presented in clean version, i.e., without any markings. Any claim text presented in clean version will constitute an assertion that it has not been changed relative to the immediate prior version.

<sup>1</sup> The Office's Electronic File Wrapper prototype program is described in *USPTO ANNOUNCES PROTOTYPE OF IMAGE PROCESSING*, 1265 Off. Gaz. Pat. Office 87 (Dec. 17, 2002) ("Prototype Announcement"), and applies only to Art Units 1634, 2827 and 2834.

- (4) A claim may be canceled by merely providing an instruction to cancel. Listing a claim as canceled will constitute an instruction to cancel. Any claims added by amendment must be indicated as (new) and shall not be underlined.
- (5) All of the claims in each amendment paper must be presented in ascending numerical order. Consecutive canceled or withdrawn claims may be aggregated into one statement (e.g., Claims 1 – 5 (canceled)).

**Example of listing of claims (use of the word "claim" before the claim number is optional):**

- Claims 1-5 (canceled)
- Claim 6 (withdrawn)
- Claim 7 (previously amended): A bucket with a handle.
- Claim 8 (currently amended): A bucket with a ~~green~~ blue handle.
- Claim 9 (withdrawn)
- Claim 10 (original): The bucket of claim 8 with a wooden handle.
- Claim 11 (canceled)
- Claim 12 (re-presented – formerly dependent claim 11) A black bucket with a wooden handle.
- Claim 13 (previously added): A bucket having a circumferential upper lip.
- Claim 14 (new): A bucket with plastic sides and bottom.

**B) Amendments to the specification:**

Amendments to the specification must be made by presenting a replacement paragraph or section marked up to show changes made relative to the immediate prior version. An accompanying clean version is not required and should not be presented. If a substitute specification is being submitted to incorporate extensive amendments, both a clean version (which will be entered) and a marked up version must be submitted as per current 37 CFR 1.125.

**C) Amendments to drawing figures:**

Drawing changes must be made by presenting replacement figures which incorporate the desired changes and which comply with § 1.84. An explanation of the changes made must be presented in the remarks section of the amendment. Any replacement drawing sheet must include all of the figures appearing on the immediate prior version of the sheet, even though only one figure may be amended. The figure or figure number of the amended drawing should not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

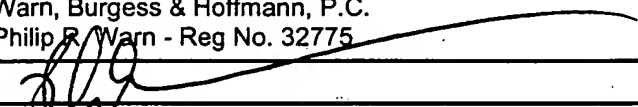
Any questions regarding the submission of amendments pursuant to the revised practice set forth in this flyer should be directed to the following legal advisors in the Office of Patent Legal Administration (OPLA): Elizabeth Dougherty ([Elizabeth.Dougherty@uspto.gov](mailto:Elizabeth.Dougherty@uspto.gov)), Gena Jones ([Eugenia.Jones@uspto.gov](mailto:Eugenia.Jones@uspto.gov)) or Joe Narcavage ([Joseph.Narcavage@uspto.gov](mailto:Joseph.Narcavage@uspto.gov)). For information on the waiver or legal aspects of the prototype, please contact Jay Lucas ([Jay.Lucas@uspto.gov](mailto:Jay.Lucas@uspto.gov)), Senior Legal Advisor (PGLA) or Rob Clarke ([Robert.Clarke@uspto.gov](mailto:Robert.Clarke@uspto.gov)), Senior Legal Advisor (OPLA). Alternatively, further information may be obtained by calling OPLA at (703) 305-1616.

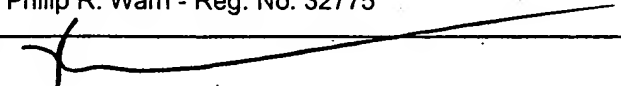
\* Revised Notice: See Sec. B) for changes relating to substitute specifications, and Sec. C) for changes on replacement drawing practice.

2

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	10/088,767
	Filing Date	March 19, 2002
	First Named Inventor	Andrew Churchett et al.
	Art Unit	2837
	Examiner Name	Karen Masih
Total Number of Pages in This Submission	Attorney Docket Number	SCH-00063

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance communication to Group
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input checked="" type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Terminal Disclaimer	Return Receipt Postcard
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s) _____	
<input type="checkbox"/> Response to Missing Parts/Incomplete Application	<b>Remarks</b> Applicant believes no fee to be due for the attached filing, however, should additional fees be due in order to prevent the abandonment of this application, please consider this as authorization to charge Deposit Account No. 501612 (Warn, Burgess & Hoffmann, P.C.) for any such fees due. A duplicate copy of this document is enclosed for this purpose.	
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		
<b>SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT</b>		
Firm or Individual name	Warn, Burgess & Hoffmann, P.C. Philip R. Warn - Reg No. 32775	
Signature		
Date	September 3, 2003	

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.			
Typed or printed name	Philip R. Warn - Reg. No. 32775		
Signature		Date	September 3, 2003

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No.: 10/088,767  
Filing Date: March 19, 2002  
Applicant: Andrew Churchett et al.  
Group Art Unit: 2837  
Examiner: Karen Masih  
Title: DIRECT CURRENT MOTOR CONTROL CIRCUIT  
Attorney Docket: SCH-00063

---

Mail Stop Non-Fee Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**AMENDMENT AND RESPONSE TO OFFICE ACTION**

Sir:

This is in response to the Examiner's Office Action dated June 3, 2003, to which a timely three month response is due by September 3, 2003. The Applicant respectfully requests reconsideration of the Examiner's rejections and/or objections in view of the remarks set forth below. Please amend the above-identified application as follows:

**Amendments to the drawings** begin on page 2 of this paper.

**Amendments to the claims** are reflected in the listing of claims which begins on page 3 of this paper.

**Amendments to the specification** begin on page 7 of this paper.

**Remarks** begin on page 8 of this paper.

## **DRAWING AMENDMENTS**

The attached drawing includes changes to Fig. 1. As required by Examiner, Applicant has amended the drawings to include descriptive details. These amendments add no new matter and support for the amendments can be found throughout the detailed description section of the specification.

See attached replacement sheet.

## CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application.

### Listing of Claims

Claim 1. (Currently Amended) A motor control circuit for a direct current electric motor having a pair of direct current inputs supplied respectively from negative and positive current sources wherein said motor is actuated to turn a shaft in one of two directions dependant on which polarity of current is being provided to said motor, said control circuit comprising:

a pair of unipolar control circuits wherein ~~at least one of said unipolar control circuits is connected between one of said a respective current sources and a current input to said motor and the other unipolar control circuit is connected between said other current source and another input to said motor, and~~

~~wherein at least one of said~~ said pair of unipolar control circuits is ~~adapted to operate said motor in one of said two opposite directions.~~

Claim 2. (Previously Amended) A motor control circuit according to claim 1 wherein each of said unipolar control circuits is substantially identical.

Claim 3. (Previously Amended) A motor control circuit according to claim 1 wherein each of said unipolar control circuits further comprises:

a solid state switch located between said motor current input and said source of direct current wherein the degree to which said solid state switch allows current to flow to said motor is controlled by an input bias signal to said switch,

a current limiting member for adjusting said input bias signal according to the current flowing through said motor, such that said solid state switch adjusts said input bias to said solid state switch such that less current flows through said motor when a predetermined period of current limiting has occurred.

Claim 4. (Previously Amended) A motor control circuit according to claim 3 wherein said current limiting member further comprises a temperature compensation circuit.

Claim 5. (Original) A motor control circuit according to claim 4 wherein said temperature compensation circuit comprises a thermistor having a negative temperature co-efficient located in said circuit so that as the ambient temperature and control circuit temperature rises the current through the thermistor increases and said input bias signal to said solid state switch is compensated.

Claim 6. (Currently Amended) A motor control circuit according to claim 3 wherein said solid state switch member ~~is arranged to not operate said motor when said current limiting is occurring for a further predetermined time~~ disengages said current flow to said motor when a predetermined period of current limiting has occurred.

Claim 7. (Currently Amended) A motor control circuit according to claim 3 wherein said solid state switch member ~~is arranged to not operate~~ disengages said current flow to said motor when current drawn by said motor exceeds a predetermined threshold current for a predetermined period of time.

Claim 8. (Previously Amended) A motor control circuit according to claim 3 wherein said current limiting member comprises:

a motor current sensing circuit comprising a shunt resistor arranged to carry a proportion of the current flowing through said motor and provide a respective voltage to the base of a bipolar transistor which is arranged to turn on at a predetermined voltage level representative of the current flowing through said motor at which it should be switched off, such that said bipolar transistor turns on when said predetermined voltage level is reached and which decreases the input bias to said solid state switch to lessen the current though said motor.

Claim 9. (Previously Amended) A motor control circuit according to claim 1 wherein at least one of said pair of unipolar control circuits conducts current to complete the circuit to allow said motor to operate.

Claim 10. (Previously Amended) A motor control circuit according to claim 1 wherein at least one of said unipolar control circuits further comprises:

a solid state switch located between said motor current input and said source of direct current wherein the degree to which said solid state switch allows current to flow to said motor is controlled by an input bias signal to said solid state switch,

a current detection member to detect the magnitude of current being drawn through said motor and if said magnitude exceeds a predetermined level for a predetermined time reduce said input to said switch.

Claim 11. (Original) A motor control circuit according to claim 1 wherein current is primarily conducted through said motor.

Claim 12. (New) A motor control circuit for a direct current electric motor comprising:

a pair of direct current inputs supplied respectively from negative and positive current sources, wherein said motor is actuated to turn a shaft in one of two directions dependent on which polarity of current is provided to said motor;

a pair of unipolar control circuits each comprising a solid state switch located between said motor current input and said source of direct current, said solid state switch being adapted to operate said motor in one of two directions, wherein the degree to which said solid state switch allows current to flow to said motor is controlled by an input bias signal to said switch; and

a current limiting member for adjusting said input bias signal according to the current flowing through said motor, such that said solid state switch adjusts said input bias to said solid state switch such that less current flows through said motor when a predetermined period of current limiting has occurred.

Claim 13. (New) A motor control circuit according to claim 12 wherein said current limiting member further comprises a temperature compensation circuit.

Claim 14. (New) A motor control circuit according to claim 13 wherein said temperature compensation circuit comprises a thermistor having a negative temperature co-efficient located in said circuit so that as the ambient temperature and control circuit temperature rises the current through the thermistor increases and said input bias signal to said solid state switch is compensated.

Claim 15. (New) A motor control circuit according to claim 12 wherein said solid state switch member disengages said current flow to said motor when a predetermined period of current limiting has occurred.

Claim 16. (New) A motor control circuit according to claim 12 wherein said solid state switch member disengages said current flow to said motor when current drawn by said motor exceeds a predetermined threshold current for a predetermined period of time.

Claim 17. (New) A motor control circuit according to claim 12 wherein said current limiting member comprises:

a motor current sensing circuit comprising a shunt resistor arranged to carry a proportion of the current flowing through said motor and provide a respective voltage to the base of a bipolar transistor which is arranged to turn on at a predetermined voltage level representative of the current flowing through said motor at which it should be switched off, such that said bipolar transistor turns on when said predetermined voltage level is reached and which decreases the input bias to said solid state switch to lessen the current through said motor.

Claim 18. (New) A motor control circuit for a direct current electric motor comprising:

a pair of direct current inputs supplied respectively from negative and positive current sources, wherein said motor is actuated to turn a shaft in one of two directions dependent on which polarity of current is provided to said motor;

a pair of unipolar control circuits each comprising a solid state switch located between said motor current input and said source of direct current, said solid state switch being adapted to operate said motor in one of two directions, wherein

the degree to which said solid state switch allows current to flow to said motor is controlled by an input bias signal to said switch; and

a current detection member to detect the magnitude of current being drawn through said motor and if said magnitude exceeds a predetermined level for a predetermined time reduce said input to said switch.

## Specification Objections

Applicant now respectfully requests entry of the following amendment to the abstract. After the claims, the following text has been amended:

~~A motor control circuit for a direct current electric motor has a pair of direct current inputs supplied respectively from negative and positive current sources. The direction of travel of the rotor of the motor is determined by the polarity of the current supplied to it. A new~~ A DC ~~motor control circuit includes a pair of substantially identical unipolar control circuits. Each of the unipolar control circuits being~~ are ~~connected between a respective current source and a current input to the motor wherein a respective unipolar control circuit is adapted to operate the motor in one of the two directions. Each of the unipolar control circuits includes a solid state switch located between a motor current input and the source of direct current. The degree to which the solid state switch allows current to flow to the motor is controlled by an input bias signal to the switch. Current limiting for adjusting the input bias signal according to the current flowing through the motor is provided in one way of controlling the motor movement. The switch adjusts the input bias to the solid state switch such that less current flows through the motor when a predetermined period of current limiting has occurred. Also a current detection can be used to detect the magnitude of current being drawn though the motor and if the magnitude exceeds a predetermined level for a predetermined time, the input bias signal to the switch can be reduced.~~



## **REMARKS**

Claims 1-18 are pending in this application.

Claims 1, 2, 6, 7, 9 and 11 are rejected.

Claims 3-5, 8 and 11 are objected to.

Claims 12-18 have been added to the application. These claims introduce no new matter, and support for these new claims can be found throughout the specification, claims and drawings as originally filed.

Claims 6 and 7 have been amended. Support for these amendments can be found throughout the specification, claims, and drawings, as originally filed.

Applicant respectfully requests reconsideration of the Examiner's rejections in view of the above amendments and the remarks set forth below.

### **Rejection of Claims 6 and 7 Under 35 U.S.C. § 112**

Claims 6 and 7 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, the Office Action rejected claims 6 and 7 based on the phrase "...switch member is arranged to not operate said motor when...period of time" being a negative limitation. Applicant has amended claims 6 and 7 to correct this defect. Applicant respectfully requests removal of the rejection of claims 6 and 7 and allowance thereof.

### **Rejection of Claims 1, 2, 9 and 11 Under 35 U.S.C. § 103(a)**

The Office Action rejected claims 1, 2, 9 and 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,749,931 (hereinafter referred to as Kegel) in view of U.S. Patent No. 4,341,985 (hereinafter referred to as Houskamp). It was stated

that Kegel discloses a motor control unit for a DC motor having a pair of DC inputs supplied from negative and positive current sources wherein the motor is actuated. The Office Action further states that Kegel also teaches a control circuit comprising a pair of unipolar control circuits wherein at least one unipolar control circuit is connected between a respective current source and a current input to the motor. It was also pointed out that Kegel lacks a motor operating in one of two directions. Houskamp was relied on by the Examiner for disclosing a motor that operates in the forward and reverse directions.

Applicant respectfully traverses the rejection of claims 1, 2, 9 and 11 under 35 U.S.C. § 103(a). Fig. 1 of Kegel shows a motor coil (L) controlled by a switch (S) that is connected to two sources (U1 and U2). Applicant contends that Kegel does not teach or suggest "a pair of unipolar control circuits wherein one of said unipolar control circuits is connected between one of said current sources and a current input to said motor and the other unipolar control circuit is connected between said other current source and another input to said motor." As stated above Kegel uses two current sources and one circuit to control the motor in both directions. For example, col. 2, lines 8-15 describes:

a coil current control device, particularly for controlling a stepping motor coil current, includes a coil which can be alternatively energized by a positive first current source or a negative second current source respectively, **switching means** for connecting said coil to said first current source under the control of a binary control signal at a first level or to said second current source under the control of that binary control signal...

The first claim of Kegel states in pertinent part "...switching means (S) for connecting said coil to said first voltage source by means of a first level of binary control signal (b), or to said second voltage source by means of a second level of said binary control signal..." Figure 1 of Kegel shows the switching means S being connected between two sources u1 and u2. It is Applicant's contention that Kegel does not describe "a pair of

Application No. 10/088,767 Page 10

unipolar control circuits wherein one of said unipolar control circuits is connected between one of said current sources and a current input to said motor and the other unipolar control circuit is connected between said other current source and another input to said motor." Kegel does not in any way teach or suggest modifying its circuitry to have a pair of unipolar control circuits. Furthermore, Applicant contends that if Kegel were modified to include this limitation, the operation of the device as whole would be significantly different since additional circuitry and configuration would be need that is well beyond the scope of Kegel.

The deficiencies of Kegel are not resolved by Houskamp. Houskamp discloses a command control circuit connected to two voltage supply sources. See Houskamp, Fig. 2, element 103,  $V_c$ ,  $-V_c$ . Houskamp does not teach or suggest having a pair of unipolar control circuits as required by claim 1 of the present application. Furthermore, if one skilled in the art were to modify the Houskamp invention to have a pair of unipolar control circuits, such a modification would certainly alter the operation to the circuitry as presently disclosed in Houskamp. Therefore, neither Kegel of Houskamp in combination or standing alone render claim 1 of the present application obvious. Therefore, Applicant respectfully requests Examiner to remove the 35 U.S.C. § 103(a) rejection of claim 1.

With respect to the Office Action's rejection of claim 2, Applicant hereby incorporates the arguments made with respect to claim 1 above. Both Kegel and Houskamp clearly only incorporate the use of one control circuit connected to two power sources. Claim 2 clearly calls for at least a pair of unipolar control circuits with each of the control circuits being substantially identical. Since both Kegel and Houskamp fail with respect to rendering claim 1 obvious, they will also fail with respect to rendering claim 2 obvious. Applicant respectfully requests removal of the 35 U.S.C. § 103(a)

rejection of claim 2. More particularly, Kegel and Houskamp fail to teach, suggest or render obvious at least a pair of unipolar control circuits as set forth above.

With respect to claim 9 of the present application, Applicant also traverses the rejection. Claim 9 adds a further limitation where "...at least one of said pair of unipolar control circuits conducts current to complete the circuit to allow the said motor to operate." Once again, Applicant incorporates the remarks made with respect to claim 1 above and maintains that these remarks also patentably distinguish claim 9 over the patents cited. Claim 9 clearly further defines "at least one pair of said unipolar control circuits" that conducts current to complete the circuit and allow the motor to operate. As stated above, both Kegel and Houskamp fail to have a pair of unipolar control circuits and since each of these references fails to, either alone or in combination, render claim 1 obvious, they will likewise fail to render claim 9 obvious, particularly with the added limitation. Applicant respectfully requests removal of the 35 U.S.C. § 103(a) rejection of claim 9.

With respect to the rejection of claim 11, the rejection will fail since claim 11 is dependent on claim 1. Claim 11 of the present application further defines a motor control circuit "wherein current is primarily conducted through said motor." Therefore, it is submitted that both Kegel and Houskamp fail to render claim 11 obvious. As set forth above, the references fail to render a pair of unipolar control circuits obvious. Therefore, the references likewise fail to render the combination of these features combined with those in claim 11 obvious. Applicant respectfully requests the Examiner to reconsider and to remove the 35 U.S.C. § 103(a) rejection to claim 11.

Applicant respectfully submits that the 35 U.S.C. § 103(a) rejections of claims 1, 2, 9 and 11 as set forth in the Office Action have been overcome in view of the amendments and remarks set forth above. It is respectfully submitted that each of these

claims and any claims dependent thereon are properly allowable. A Notice of Allowability as to these claims is respectfully requested.

### **Allowable Matter**

The Office Action objected to claims 3-5, 8 and 10 for being dependent upon a rejected base claim. The Office Action further indicated that these claims would be allowable if rewritten in independent form to include all of limitations of the base claim and any intervening claims. Applicant now submits new claims 12-18 which include all of the subject matter of claims 3-5, 8 and 10 and includes all of the limitations of the base claim (i.e., claim 1) and any intervening claims. Applicant now respectfully requests allowance of new claims 12-18.

### **CONCLUSION**

It is respectfully submitted that in view of the above amendments and remarks the claims 3-5, 8 and 10, as amended, are patentably distinguishable because the cited patents, whether taken alone or in combination, do not teach, suggest or render obvious, the present invention. Therefore, Applicant submits that the pending claims are properly allowable, which allowance is respectfully requested.

The Examiner is invited to telephone the Applicant's undersigned attorney at (248) 364-4300 if any unresolved matters remain.

Respectfully submitted,

P.O. Box 70098  
Rochester Hills, MI 48307  
(248) 364-4300

WARN, BURGESS & HOFFMANN, P.C.  
Attorneys for Applicant(s)

Dated: September 3, 2003

By: 

Philip R. Warn  
Reg. No. 32775

PRW:GLO:acw

(REPLACEMENT SHEET)

1/5

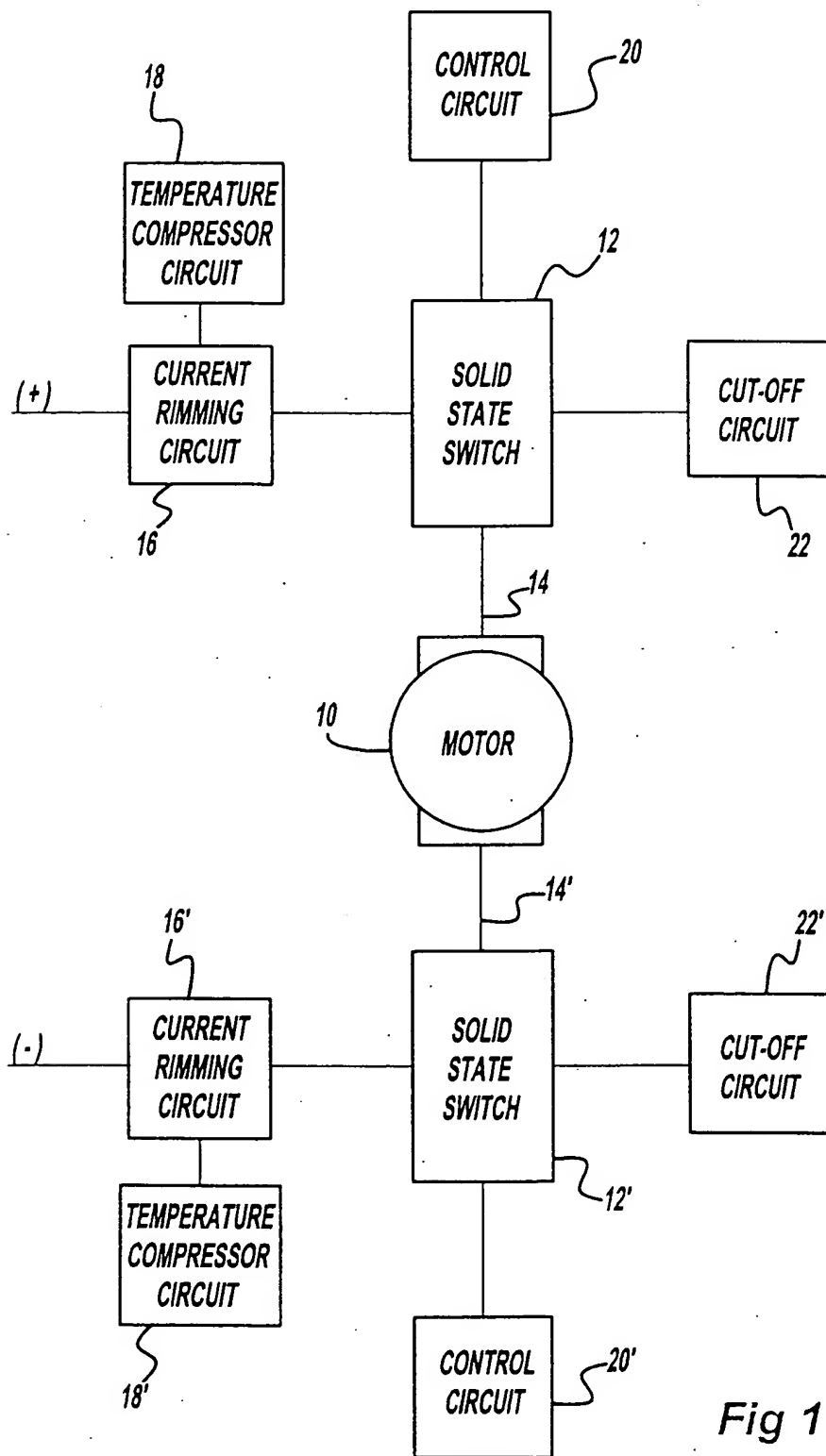


Fig 1

2

NOV 16 2004

TECH CENTER 1600/2900

Case No. SCH-00063

U.S. Patent Application

Applicant: Andrew Churchett et al.

Serial No. 10/088,767

Filed: March 19, 2003

Title: DIRECT CURRENT MOTOR CONTROL CIRCUIT



Please acknowledge receipt of the following contents  
by date stamping and returning this postcard to  
Warn, Burgess & Hoffmann, P.C.

Transmittal Form with Certificate of Mailing (in duplicate);  
Amendment and Response to Office Action; and this  
Postcard

PRW: September 3, 2003

NOV 16 2004

TECH CENTER 1600/2900



4

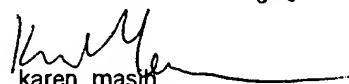
<b>Notice of Abandonment</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/088,767	CHURCHETT ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	karen masih	2837	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 03 June 2003.
  - (a) ☐ A reply was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply (including a total extension of time of \_\_\_\_\_ month(s)) which expired on \_\_\_\_\_.
  - (b) ☐ A proposed reply was received on \_\_\_\_\_, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.  
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
  - (c) ☐ A reply was received on \_\_\_\_\_ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
  - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
  - (a) ☐ The issue fee and publication fee, if applicable, was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
  - (b) ☐ The submitted fee of \$\_\_\_\_\_ is insufficient. A balance of \$\_\_\_\_\_ is due.  
The issue fee required by 37 CFR 1.18 is \$\_\_\_\_\_. The publication fee, if required by 37 CFR 1.18(d), is \$\_\_\_\_\_.
  - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
  - (a) ☐ Proposed corrected drawings were received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply.
  - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on \_\_\_\_\_ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

571-272-2068

  
karen masih  
Primary Examiner  
Art Unit: 2837

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/088,767

03/19/2002

Andrew Churchett

BRI -00063

2290

7590

08/20/2004

Philip R Warn  
Warn Burgess & Hoffmann  
Suite B125  
691 North Squirrel Road  
Auburn Hills, MI 48326

EXAMINER

MASIH, KAREN

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 08/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

5